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09/205,115	12/03/1998	JOHN C. EIDSON	10980749	8189

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AGILENT TECHNOLOGIES, INC.
INTELLECTUAL PROPERTY ADMINISTRATION, LEGAL DEPT.
P.O. BOX 7599
M/S DL429
LOVELAND, CO 80537-0599

EXAMINER	
HOLLOWAY III, EDWIN C	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 13

Application Number: 09/205,115
Filing Date: December 03, 1998
Appellant(s): EIDSON, JOHN C.

Paul H. Horstmann
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed March 10, 2004.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement that applicant is unaware of any other related appeals or interferences that may directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The appellant provides a statement in the Brief that the rejection of claims 18-22 and 27-37 stand or fall together (Group I) and the rejection of claims 23-26 stand or fall together (Group II)

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

5146410	KAWAMURA et al.	09-1992
5566180	EIDSON et al.	10-1996
4514814	EVANS	04-1985

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 18-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamura (US 5146410) and Eidson '180 (US 5566180).

Kawamura discloses a multiple axes motion control system where command values and execution time is sent to each axis control circuit or node. Pulses are sent to the circuits which are considered to provide synchronization, but clocks with synchronization time are not specified. See at least fig. 1, col. 2 and the abstract. Although axis control circuits 25-26 are grouped as group B, Kawamura comprises separate axis control

circuit 24-26 where axis control circuit 24 receive execution time Ta and axis control circuits 25-26 receive execution time Te. Axis control circuits in the same group have start command moving at the same execution times, but separately receive and store axis commands. Further the grouping of the axes and the execution times may be varied from the PMC 10.

Eidson '180 discloses an analogous art synchronized clock system with nodes including clocks synchronized by a protocol over a network for industrial process facilities monitoring and control. This assures successful operation of for systems such as process control which depends on accurately knowing times for applying control signals at known times. See at least cols. 1-5.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included in Kawamura the axis circuits or nodes including clocks synchronized by a protocol over a network disclosed in Eidson '180 to assure successful operation of for systems such as process control which depends on accurately knowing times for applying control signals at known times and suggested by Kawamura disclosing machine control and with execution times suggestive of process facilities with clock synchronization in Eidson '180.

3. Claims 18-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamura (US 5146410) and Eidson (US 5566180) as applied above in view of Evans (US 4514814).

Evans discloses an analogous art axis control system with independently controlled axes. Coordinated motion of several axes is attained by programmable grouping axis into motion groups to provide a desired motion. See the abstract and col. 1. If independent control is not clear from the combination applied above then it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included independent control as disclosed in Evans for providing desired motion as suggested by col. 2 lines 42-46 of Kawamura disclosing that the grouping may be varied according to commands from the PMC.

(11) Response to Argument

4. Appellant's arguments filed 3-10-04 have been fully considered but they are not persuasive.

The argument that Kawamura and Eidson lack the single axis control nodes each having a clock and coordinated using network time synchronization is not persuasive because claim 27 does not specify synchronization to "network" time and does not specify "control nodes" having a clock and only a single axis. Claim 27 may be considered representative of the group I (18-22 and 27-

37). Kawamura includes axis control circuits (24-26) that represent control nodes. Although a clock in each axis control circuit is not expressly described in Kawamura, "execution times" are discussed in col. 2 lines 23-41 the need to provide synchronized operation is discussed in col. 1 lines 32-38. This suggests synchronized clocks as provided by Eidson to provide accurate time without loss of synchronization (col. 1 lines 15-39) for process facilities that suggest the PMC/CNC of Kawamura and event trigger generator in col. 7 lines 10-23 suggestive of the execution times in Kawamura.

The argument that the applied art lacks a selector node and tables is not persuasive because the PMC in Kawamura is a selector node (axis control circuits 24-26 are control nodes) and the plural command values stored in memory in col. 2 line 24 at least suggest a table.

The argument that the PMC 10 is coupled to a CNC 20 in Kawamura that issues command signals for controlling three axes instead of a single axis is not persuasive because claim 27 does not require a "control node" controlling only a singe axis. Further, there is no need that the entire CNC 20 be a node. Command signals controlling three axes is not a limitation of a single node or circuit. Fig. 1 of Kawamura shows three axis control circuits (24-25) and each access control circuit (24-26)

may be a node and respond to different execution times. The argument that the CNC of Kawamura represents the motion control card of applicant's prior art with the shortcomings of the prior art is not persuasive because Kawamura never specifies a single card CNC. The argument that the axis control circuits of Kawamura are in a single apparatus 20 is not persuasive because applicant's claims do not require a separate apparatus for each node. The argument that the commands a are sent to buffers (24-26) from the PMC via a common RAM is not persuasive because each axis control circuit (24-26) has an associated buffer (21-23). The common RAM is part of the PMC that corresponds to the selector node.

Appellant argues that Kawamura and Eidson lacks a control node that applies a control value to an axis of a motion control system when a trigger time associated with the control value matches a time in a clock in the control node because the execution times in Kawamura are not trigger times but are time intervals for distributing pulse. The examiner disagrees because the execution times in Kawamura provide synchronized operation. Synchronized time suggests clocking. The argument that Kawamura is limited to pulses confined to the execution times intervals Ta and Te after being triggered by commands is not persuasive because col. 2 lines 42-46 groupings and timing

can be varied by the commands The argument that Eidson lacks this limitations is not persuasive because Eidson discloses nodes with synchronized clocks for accurate time without loss of synchronization event triggers for applications such as process facilities suggesting combination with the computer numerical control system for control of an axis of motion in Kawamura.

Applicant argues that Kawamura and Eidson lacks coordinating application of control values to multiple axes by associating them with trigger times because Kawamura groups the axes instead. The examiner disagrees because the grouped axes have a common execution time corresponding to a common execution time.

The argument that the examiner lacks motivation to combine Kawamura and Eidson because Kawamura includes a single CNC apparatus instead of a distributed network. The examiner disagrees because the Kawamura does not prohibit distributed components in the CNC. Note the CNC in Evans multiple or distributed axis control circuits. Further Eidson refers to industrial proves facilities and synchronized event triggers for controlling application such as relays (actuators) suggesting the synchronized access control of Kawamura. The argument that synchronization of Eidson would have not be applicable to Kawamura because the CNC of Kawamura is a single apparatus

without any network latency is not persuasive because Kawamura has not specified how large this apparatus may be. It may be spread across an industrial process facility or computer controlled robotic factory. Reference is again made to the distributed component CNC of Evans.

The argument the Kawamura and Eidson lack control code table holding pre-computed control values and trigger times is not persuasive in view of the command values and execution times in claim 1 lines 9-10 of Kawamura.

The argument that Evans is not applicable because this patent includes a set of axis boards each for controlling multiple axes instead of single axis of motion control system. This argument is not persuasive because claim 27 is not limited to a single axis. Further, the claimed node is not limited to a single board. Each axis control microcomputer (36, 38,40,42) in Evans may be considered a node. The argument that Evans lacks applying control values to an axis when a trigger time matches a time in a node clock for coordinating application of control values to multiple axis is not persuasive because Evans includes coordinated control in col. 1 lines 47-58 and sync signals and timing signals in col. 9 lines 35-65 representing clocking for coordinated control that at least suggest the event trigger times of Eidson.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Edwin C. Holloway, III
Primary Examiner
Art Unit 2635

eh
May 26, 2004

Conferees

AGILENT TECHNOLOGIES, INC.
INTELLECTUAL PROPERTY ADMINISTRATION, LEGAL DEPT.
P.O. BOX 7599
M/S DL429
LOVELAND, CO 80537-0599

BRIAN ZIMMERMAN
PRIMARY EXAMINER

MICHAEL HORABIK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

conferee